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ABSTRACT

To determine the effects of planned career development activities on middle school children, 135 sixth, seventh, and eighth grade students from predominantly black middle class families were divided into two groups (experimental and control) and pre-tested using the attitude scale and competency subtests (problem solving, planning, occupational information, self appraisal, and goal selection) of the Career Maturity Inventory (CMI). For one semester the experimental group participated in a career development program. At the end of the semester students from both groups were posttested using the CMI. Additional data from aptitude and achievement tests were collected for correlational studies with the CMI competency subtests. Statistical analysis was conducted, and the following findings were reported: no significant differences were found between the groups on pretest measures, but the experimental group showed greater gains on all subtests of the CMI posttest with the exception of problem solving; the scores were significantly different on subtests of self appraisal, occupational information, and goal selection; in the experimental group there were also significant differences in the change scores between boys and girls on self appraisal and problem solving; posttest scores for each grade level were greater than the preceding grade level with the exception of problem solving in the seventh grade; all CMI subtest scores with the exception of problem solving were positively correlated with scores from aptitude and achievement tests. (EM)

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EFFECTS OF A CAREER DEVELOPMENT PROGRAM ON MIDDLE SCHOOL CHILDREN[1]

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INTRODUCTION

A program in career education is designed to extend the academic setting to the world of work. If students see clear relationships between school tasks and future work, motivation appears to be stronger and learning more meaningful (Hoyt, 1975). Career development is a developmental process which progresses through differentiable periods and unfolds along several distinct, but interrelated dimensions such as consistency of career choice over time, realism of career choice in relation to personal capabilities and employment opportunities, career choice attitudes, and career choice competencies (Crites, 1969). As educators have accepted the developmental concept, experiences have been designed for the middle school that would assist a student with the development of a positive self-concept, interpersonal and basic skills, the discipline of work, knowledge about workers, increased understanding of the influence and control people can exercise over their lives, and respect for others and for the work they do.

State departments of education have mandated career education programs in schools in some states. Federal funds have been spent to develop exportable products in career development programs. However, little research has been published on the effectiveness of such programs. This study investigates one such program.

HYPOTHESES

1. After one semester of planned career experiences, the mean scores of students in the treatment group will significantly increase over the mean of scores of students in the control group on the attitude scale and competency subtests–problem solving, planning, occupational information, self appraisal, and goal selection–of the Career Maturity Inventory (CMI).

2. There will be a significant difference in amount of change between pre- and posttest scores on the CMI when the experimental group is compared with control group.

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3. The mean difference on all parts of the CMI between pre- and posttest scores of girls in the treatment group will not differ significantly from the difference between pretest and posttest scores of boys in the treatment group.

4. The mean posttest scores for each grade level will be greater than the preceding grade level.

5. The difference between pre- and posttest scores on all parts of the CMI will be positively correlated with mental aptitude scores on the Kuhlmann-Anderson Test of General Aptitude (IQ).

6. There will be a positive correlation between achievement scores on reading comprehension, arithmetic problem solving, and total test score on the Stanford Achievement Test (SAT) and the posttest of each of the five competency subtests of CMI.

METHOD

Subjects

The 135 subjects were middle school children at a laboratory school at a state college. There were 69 students in the experimental group and 66 in the control group. There were 46 sixth graders, 25 experimental, 21 control; 49 seventh graders, 23 experimental, 26 control; and 40 eighth graders, 21 experimental and 19 control. Originally there was the same number in each group as a result of the random assignment; however, due to attrition or absentism during the final testing session, data was not available on all and those without it were eliminated. Seventy-two of the subjects were male and 63 female. There were more males in the control group and more females in the experimental group as a result of attrition. Students were predominantly black middle class.

Teacher Selection and Inservice Education

The six middle school basic subject teachers were randomly assigned to the experimental or control groups. Teachers for the experimental group were sixth grade teacher, a young male science instructor, a seventh grade teacher, a female middle aged language arts instructor, and eighth grade teacher, a female middle aged language arts instructor. These teachers carried out the treatment for the experimental groups.

The experimental teachers attended a two day workshop prior to the beginning of the study and a two hour session once a month during the program. The sessions were used primarily to clarify concerns about career development.

Experimental Conditions

The children viewed video tapes and participated in activities prescribed in the curriculum guide of "Bread and Butterflies," a career development program for middle school students, for two 50 minutes period per week for one semester, four months. The video tapes were viewed in the college learning laboratory which is in walking distance of the school. Readiness activities and follow-up experiences were in the students' classroom.

Assessing Instruments

Instruments used as variables were Career Maturity Inventory, Kuhlmann-Anderson Mental Aptitude Test, and several subtests from the Stanford Achievement Test. The CMI was used to measure the maturity of attitudes and competencies that are critical in realistic career decision making. The attitude scale assessed the feelings, the subjective reactions, the dispositions that the individual has toward making a career choice and entering the world of work. In contrast, the competency subtests measured the cognitive variables involved in choosing an occupation such as self appraisal, occupational information, goal selection, planning, and problem solving. The Kuhlmann-Anderson and the total score plus the subtests reading comprehension and arithmetic problem solving of the Stanford Achievement Test were used for the correlational studies with the differences between pre- and posttesting and the posttest scores of the competency subtests of CMI.

Procedure

The CMI was first collected in January, and is henceforth referred to as pretesting. All students in the middle school who could read on sixth grade level were administered the instrument as a group by the counselor with all the teachers, with the exception of one, as proctors. The boys and girls with less than a sixth grade reading level were grouped and read the items by a middle school teacher during the identical time period of the large group assessment. Posttesting occurred in May, under the same conditions as pretesting.

Achievement scores were derived from the Stanford Achievement Test administered in the later part of April each year in each grade as part of the school testing program. I.Q. scores also came from the school files. The Kuhlmann-Anderson Tests were administered the 6th graders in December 1975, 7th graders in February, 1977, and 8th graders in December, 1975.

Data Analysis

Statistical Analysis Systems (SAS) was used to analyze the data. Procedures ANOVA, MEANS, CORRELATIONS, and GENERAL LINEAR MODELS were computed with a 2 x 2 x 3 design. Data were analyzed by total, experimental-control groups, sex, grade and combinations of these. I. Q. and the Stanford Achievement Test scores as well as the pre-post Career Maturity Inventory subscales were treated. Level of significance was .05.

RESULTS

When the experimental and control groups were compared on pretest measures, there were no significant differences. However, after one semester of treatment with career education activities, the means of the experimental group showed greater gains on subtests of CMI than means of the control group and were significantly different on subtests self appraisal, occupational information, and goal selection (see Table 1). Thus the hypothesis was accepted for the subtests mentioned above and rejected for subtests attitude, planning and problem solving of CMI

The difference between pre- and posttest scores were compared for the two groups and the experimental group showed significantly greater gains in all areas with the exception of problem solving (see Table 2). Hypothesis 2 was accepted then for subtests attitude, self appraisal, occupational information, goal selection and planning and was rejected for subtest problem solving.

There were significant differences in the change scores between boys and girls in the experimental group on self appraisal and problem solving subscales of the CMI. Although the other four subscale differences between pre- and post were not significant, all showed that boys' scores changed more than girls as a result of treatment. Therefore, hypothesis 3 must be partially rejected (see Table 3)

The hypothesis that mean posttest scores for each grade level will be greater than the preceding grade level was substantiated in the study with the exception of problem solving in the seventh grade (see Table 4). The eighth grade had a lower mean score than the seventh grade. Hypothesis 4 is accepted.

All subtests scores on CMI, pre and post, were positively correlated with IQ except the problem solving pre and post. However, when the difference between pre- and posttest scores were examined, only planning correlated significant (negatively) with IQ (see Table 5). Thus hypothesis 5 was rejected.

When posttest scores of the competency subtests of CMI for control and experimental groups were correlated with Stanford Achievement Test total, reading comprehension, and arithmetic problem solving, all correlations were positive and significant with the exception of problem solving posttest with Stanford reading comprehension subscale (see Table 6). Hypothesis 6 was accepted with the exception cited above.

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR INSTRUMENTS AND F VALUES FOR ANOVA OF EXPERIMENTAL vs. CONTROL GROUPS

CMI	Total N = 135	Exp. N = 69	Control N = 66	F Exp.-Control	P
Pretesting					
Attitude	28.94 (6.09)	28.02 (6.11)	29.89 (5.97)	3.21	.08
Self Appraisal	9.04 (3.55)	9.08 (3.53)	8.98 (3.60)	.03	.87
Occupational Information	10.92 (3.81)	10.75 (3.38)	11.11 (4.24)	.29	.59
Goal Selection	9.20 (3.16)	8.88 (2.85)	9.53 (3.46)	1.41	.24
Planning	11.28 (6.06)	10.59 (4.04)	12.06 (7.59)	1.86	.17
Problem Solving	7.03 (7.02)	6.78 (3.12)	9.29 (9.56)	.17	.68
Posttesting					
Attitude	30.80 (6.31)	31.32 (7.19)	30.26 (5.23)	.96	.33
Self Appraisal	9.90 (4.02)	10.68 (4.18)	9.09 (3.69)	5.46	.02*
Occupational Information	11.82 (4.63)	12.69 (4.92)	10.91 (4.14)	5.18	.02*
Goal Selection	10.93 (3.68)	11.87 (3.59)	9.94 (3.53)	9.90	.002**
Planning	12.16 (5.66)	12.30 (4.53)	12.01 (6.68)	.09	.77
Problem Solving	8.68 (7.96)	8.75 (3.55)	8.62 (10.84)	.01	.92
Kuhlmann-Anderson	101.29 (14.55)	100.84 (15.65)	101.76 (13.39)	.32	.79
Stanford Achievement					
Reading Comp.	40.10 (14.26)	40.83 (13.80)	39.33 (14.79)	.37	.55
Arith. Problem Solving	19.07 (8.41)	18.33 (8.02)	19.83 (8.82)	1.07	.30
Total Battery	289.13 (101.49)	286.46 (95.20)	291.90 (108.34)	.10	.76

Note – Standard deviations are in parentheses.
*Significant at .05 level
**Significant at .01 level

TABLE 2

MEANS AND STANDARD DEVIATIONS OF DIFFERENCE SCORES BETWEEN PRE– AND POST CMI FOR TOTAL, EXPERIMENTAL AND CONTROL GROUPS AND F RATIOS

CMI	Total N = 135	Experm. N = 69	Control N = 66	F	P
Attitude Dif.	1.86 (4.96)	3.29 (4.96)	.36 (4.27)	12.77	.0005***
Self Appraisal Dif.	.87 (3.45)	1.59 (3.55)	.11 (3.19)	6.54	.01**
Occupational Inform. Dif.	.90 (3.73)	1.94 (3.93)	-.20 (3.17)	12.03	.0007***
Goal Selection Dif.	1.73 (3.22)	2.99 (3.12)	.41 (2.79)	25.52	.0001***
Planning Dif.	.87 (4.04)	1.71 (4.09)	.00 (3.82)	6.28	.01**
Problem Solving Dif.	1.66 (3.04)	1.97 (3.22)	1.33 (2.83)	1.49	.22

Note - Standard deviations are in parentheses.
*Significant at .05 level
**Significant at .01 level
***Significant at .001 level

TABLE 3

MEANS AND STANDARD DEVIATIONS OF BOYS AND GIRLS DIFFERENCE SCORES (PRE–POST DIFFERENCE) FOR EXPERIMENTAL GROUP AND F RATIOS

CMI	Boys N = 32	Girls N = 37	F	P
Attitude Dif.	4.03 (4.92)	2.65 (5.38)	1.23	.27
Self Appraisal Dif.	2.66 (3.23)	0.67 (3.60)	5.71	.02*
Occupational Inform. Dif.	2.59 (4.08)	1.38 (3.77)	1.65	.20
Goal Selection Dif.	3.25 (3.57)	2.76 (2.69)	.43	.52
Planning Dif.	2.34 (4.90)	1.16 (3.22)	1.44	.23
Problem Solving Dif.	2.84 (2.94)	1.21 (3.29)	4.62	.04*

Note - Standard deviations are in parentheses.
*Significant at .05 level

TABLE 4

MEANS AND STANDARD DEVIATIONS OF CMI SUBSCALES BY GRADES

CMI	6th Gr. N = 46	7th Gr. N = 49	8th Gr. N = 40
Posttest			
Attitude	28.48	30.22	34.17
	(6.78)	(5.51)	(5.25)
Self Appraisal	7.59	10.38	11.97
	(3.64)	(3.84)	(3.30)
Occupational Inform.	9.02	13.08	13.50
	(4.33)	(4.46)	(3.64)
Goal Selection	9.50	11.02	12.45
	(3.83)	(3.58)	(3.00)
Planning	9.76	12.67	14.30
	(4.67)	(7.02)	(3.53)
Problem Solving	6.32	10.16	9.60
	(3.01)	(12.40)	(2.81)

Note: Standard Deviations are in parentheses.

TABLE 5

CORRELATIONS BETWEEN IQ AND PRE–POST DIFFERENCE SCORES OF CMI FOR TOTAL AND FOR EXPERIMENTAL

CMI	IQ N = 135	IQ N = 69
Attitude Dif.	-.07	-.04
Self Appraisal Dif.	-.07	-.07
Occupational Inform. Dif.	.06	05
Goal Selection Dif.	-.02	-.11
Planning Dif.	-.19*	-.27*
Problem Solving Dif.	-.07	-.08

*Significant at .05 level

TABLE 6

CORRELATIONS BETWEEN POST CMI COMPETENCY TESTS AND STANFORD TOTAL, READING COMPREHENSION AND ARITHMETIC PROBLEM SOLVING

CMI	Stan. Total	Read. Comp.	Arith. Prob. Solv.
Self Appraisal	.36***	.48***	.40***
Occupational Information	.38***	.49***	.41***
Goal Selection	.39***	.38***	.50***
Planning	.59***	.36***	.43***
Problem Sovling	.46***	.15	.24**

**Significant at .01 level
***Significant at .001 level

DISCUSSION AND CONCLUSIONS

The study seems to support the developmental nature of career maturity and to indicate that there are developmental tasks to be accomplished at different levels. The increase in means by grade level on the CMI would also support the construct validity of the CMI as an instrument to measure "maturity."

IQ was significantly correlated with the scores on the CMI and the Stanford Achievement Test; yet it was not correlated with the difference between pre and posttest scores. This would suggest that the program was just as effective with low ability as with high ability. Obviously, low ability students need realistic career information and planning as much as or more than the high ability students.

Boys pre-post means difference scores were larger than girls in the experimental group. Previous research (Nurry, 1976 and Roseberry, 1976) supported this result. Boys appear to respond with more change than girls. Pretest means for girls were slightly higher than boys' pretest means. These differences did not show up for the control group or the total sample.

Programs of career development it would appear can bring about career maturity changes in middle school children. Boys would seem to respond more than girls. Additional research controlling for other variables and samples are needed. The nature of this sample, black middle class, limits generality to other groups.

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